Acta Zootaxonomica Sinica, 33 (3): 600– 607 (July, 2008) ISSN 1000-0739
动物分类学报

中国缺叉多距石蛾属六新种 (毛翅目, 多距石蛾科)

钟 花[1,1)] 杨莲芳[1,2)] John C. Morse[2]
1. 南京农业大学昆虫学系 南京 210095, E-mail: lfyang@njau.edu.cn
2. 美国克莱姆森大学昆虫、土壤和植物科学系 克莱姆森南卡罗来纳州 29634-0315

摘 要 记述了缺叉多距石蛾属 6 新种: 即圆叶缺叉多距石蛾 *Polyplectropus rotundifolius* sp. nov., 三歧缺叉多距石蛾 *Polyplectropus trifurcatus* sp. nov., 三角缺叉多距石蛾 *Polyplectropus trigonius* sp. nov., 钩状缺叉多距石蛾 *Polyplectropus unciformis* sp. nov., 指状缺叉多距石蛾 *Polyplectropus digitaliformis* sp. nov., 具针缺叉多距石蛾 *Polyplectropus acicularus* sp. nov.。新种模式标本保存于南京农业大学昆虫标本馆。

关键词 毛翅目, 缺叉多距石蛾属, 新种, 中国.
中图分类号 Q969.411.4

缺叉多距石蛾属 *Polyplectropus* Ulmer, 1905 隶属于毛翅目 Trichoptera 纹石蛾总科 Hydropsychoidea 多距石蛾科 Polycentropodidae 多距石蛾亚科 Polycentropodinae。世界已知 165 种 (Zhong *et al*., 2006), 分布于世界各大动物地理区, 但主要分布于东洋界 (97 种) 和新热带界 (53 种)。中国缺叉多距石蛾属已记录 16 种 (Zhong *et al*., 2006)。李佑文等 (1997) 曾对该属进行了系统研究, 为该属建立了 *Polyplectropus inaequalis* Li & Morse 种团。作者在 2003 ~ 2005 年间整理了 1994~ 2005 年间积累的南京农业大学毛翅目多距石蛾馆藏标本, 鉴定出一批新种与新纪录种, 继 2006 年发表的 6 新种 (云南、四川、广西、安徽) (Zhong *et al*., 2006), 本文新记述 6 新种, 均分布于东洋界, 仅圆叶缺叉多距石蛾 *Polyplectropus rotundifolius* 可归入 *Polyplectropus inaequalis* Li & Morse 种团 (Li & Morse, 1997), 对该属中与三角缺叉多距石蛾 *Polyplectropus trigonius* sp. nov. 和具针缺叉多距石蛾 *Polyplectropus acicularus* sp. nov. 近缘的种类做了初步探讨。

1 圆叶缺叉多距石蛾, 新种 Polyplectropus rotundifolius **sp. nov.** (图 1~ 6)

前翅长 6.1 mm (n = 1)。触角黄色, 头褐色, 前胸淡褐色, 中、后胸褐色, 翅淡褐色。

雄外生殖器 第 IX 节腹板后缘广弧形凹缺, 中央略突出, 第 IX+ X 节背板短, 背面观亚梯形。上附肢侧面观于近中部处分为二叉, 背枝细短指状, 腹枝宽大, 长为背枝的 3 倍; 上附肢的针状背基突侧面观其前伸部分粗壮, 腹缘明显向背方缢缩, 后折部分细直, 长约为前者的 3 倍。下附肢侧面观长约为基宽的 2 倍, 腹面观附肢主体顶端较平截, 距端外角 1/3 处具 1 小凹缺, 端内角短三角形, 指向中轴, 腹侧片发达, 端部 1/4 收窄呈馒头形, 顶端伸至下附肢主体外方。阳茎下片宽平, 腹面观端半部略收狭, 末端具广 "V" 形凹缺。阳茎简单管状, 长约为均宽的 3.5 倍。

正模 ♂, 广东省龙门县 (24.48°N, 113.18°E), 南昆山保护区保护站门口无名小溪, 海拔 515 m, 2004-05-16, J. C. Morse、杨莲芳采。

本种雄外生殖器与江西种 *Polyplectropus involutus* Li & Morse, 1997 较相似, 新种: 1) 下附肢腹侧片顶端钝圆; 2) 下附肢主体端内角短三角形; 3) 上附肢腹枝长为背枝的 2 倍; 4) 上附肢的针状背基突侧面观后折部分平直; 5) 阳茎下片末端具 1 广 "V" 形凹缺。后者: 1) 下附肢腹侧片顶端三角形; 2) 主体端内角极细长, 指向中轴, 于中轴处相互接触; 3) 上附肢背枝为腹枝 2/3 倍长, 针状背基突侧面观向下弯呈广弧形; 4) 阳茎下片仅末端中央具 1 小凹缺。

本种隶属于异缺叉多距石蛾种团 Group *Polyplectropus inaequalis* Li & Morse, 1997, 该种团雄虫外生殖器上附肢分为二叉, 阳茎下片宽而扁平, 薄片状。李佑文等 (1997) 将 4 个中国种: 内折缺叉多距石蛾 *Polyplectropus involutus* Li & Morse, 1997 (江西)、异缺叉多距石蛾 *Polyplectropus inaequalis* Ulmer, 1927 (台湾)、南京缺叉多距石蛾 *Polyplectropus nanjingensis* Li & Morse, 1997 (江苏、陕西、安徽、浙江)、扁平缺

美国国家自然科学基金项目资助 (DEB0316504).
1) 现工作单位江苏省农业科学院植物保护研究所.
2) 通讯作者.
收稿日期: 2007-11-15, 修订日期: 2008-03-20.

叉多距石蛾 *Polyplectropus explanatus* Li & Morse, 1997 (江西、河南、广东) 及 1 个俄罗斯种 *Polyplectropus nocturnus* Arefina, 1996 归入该种团, 本文新增加 1 种。

词源: “*rotundifolius*” 意为 “圆叶的”, 指雄外生殖器下附肢腹侧片顶端钝圆。

分布: 广东 (龙门南昆山)。

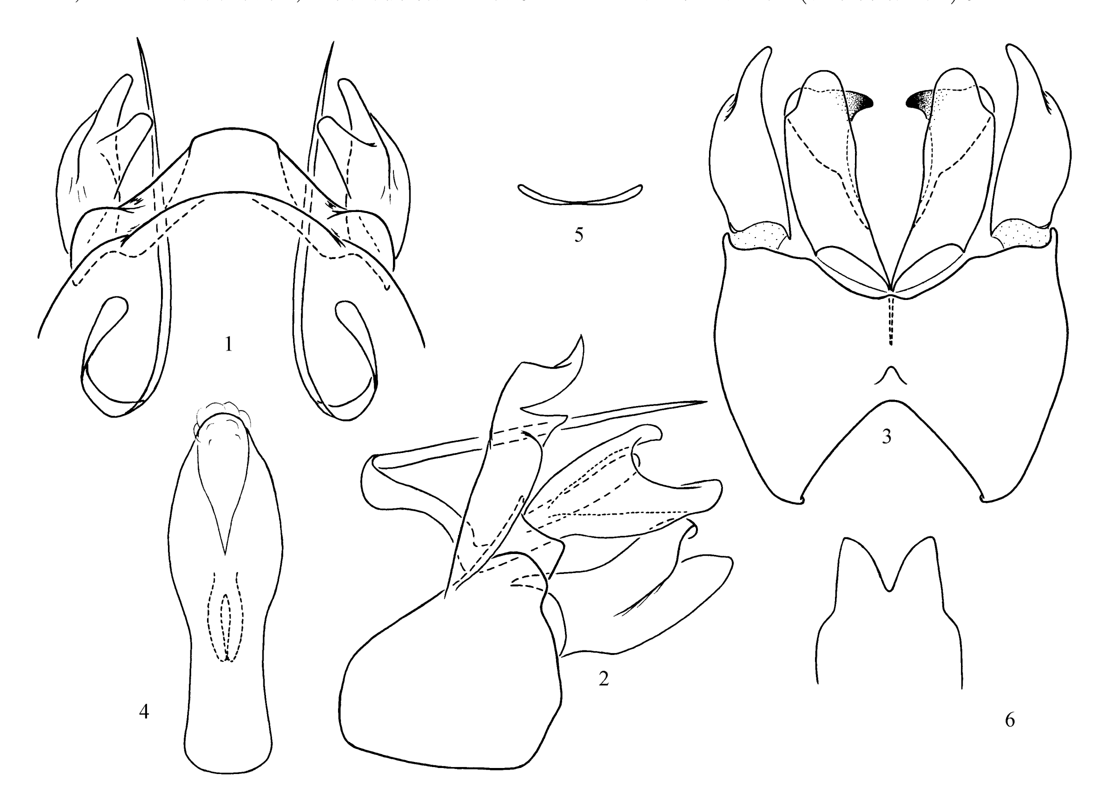


图 1~ 6　圆叶缺叉多距石蛾, 新种 *Polyplectropus rotundifolius* sp. nov., 雄外生殖器 (adult male genitalia)
1. 背面观 (dorsal view)　2. 侧面观 (lateral view)　3. 腹面观 (ventral view)　4. 阳茎背面观 (phallus, dorsal view)　5. 阳茎下片后面观 (subphallic sclerite, caudal view)　6. 阳茎下片腹面观 (subphallic sclerite, ventral view)

歧缺叉多距石蛾, 新种 Polyplectropus trifurcatus **sp. nov.** (图 7~ 12)

前翅长 5.1 mm (*n* = 1)。触角黄色, 头褐色, 其上毛瘤污黄色, 前胸污黄色, 中、后胸褐色, 其上毛瘤黄色, 翅灰白色。

雄外生殖器　第Ⅸ节腹板后缘中央略呈三角形突出。上附肢侧面观均匀而狭长, 向背方拱形弯曲, 末端钝圆; 上附肢背基突末端1/3分为 2 叉。下附肢侧面观长约为基宽的 2 倍, 末端分枝似呈 3 个钩状突, 腹面观分枝为片状突, 背、腹片呈四边形, 中片钩状并强烈骨化, 腹侧片发达, 腹面观基部顶端伸达主体端部1/3处。阳茎下片宽平, 腹面观末端具深 “U” 形凹缺, 腹方基部具 1 对骨化的长针突。阳茎简单管状, 长约为均宽的 5 倍。

正模　♂, 江西省九连山国家级自然保护区 (24.32°N, 114.28°E), 虾公堂河无名支流, 海拔 630 m, 2005-06-07, 周欣、孙长海采。

本种雄外生殖器与湖北种 *Polyplectropus acutus* Li & Morse, 1997 相似, 新种: 1) 上附肢背基突端部1/3分为 2 叉; 2) 下附肢顶端裂为 3 片; 3) 阳茎下片末端具 1 深 “U” 形凹缺。后者: 1) 上附肢背基突仅为单枝; 2) 下附肢顶端仅裂为 2 片; 3) 阳茎下片末端呈三角形突出。

词源: “*trifurcatus*” 源于 “trifurcates”, 意为 “三歧的”, 指雄外生殖器下附肢末端 3 分枝。

分布: 江西 (九连山)。

三角缺叉多距石蛾, 新种 Polyplectropus trigonius **sp. nov.** (图 13~ 18)

前翅长 4.5~ 5.8 mm (*n* = 42)。触角淡褐色, 头褐色, 前胸淡褐色, 中、后胸及翅褐色。

雄外生殖器　第Ⅸ节腹板后缘广弧形凹缺, 中央具钝三角形突出。上附肢极长, 侧面观呈棒头状, 基半部狭窄; 长针状背基突于近基部1/3处折向尾方, 前伸部分腹缘具钝角突出, 后折部分浅弧形上曲, 背面观其末端钝截。下附肢侧面观长约为均宽的 2 倍, 端部1/4细长, 腹侧片极发达, 宽约为附肢基宽的1/2, 末端伸达附肢中部; 腹面观主体端部1/4收窄呈尖三角形, 内侧缘近中部具 1 粗大的指突,

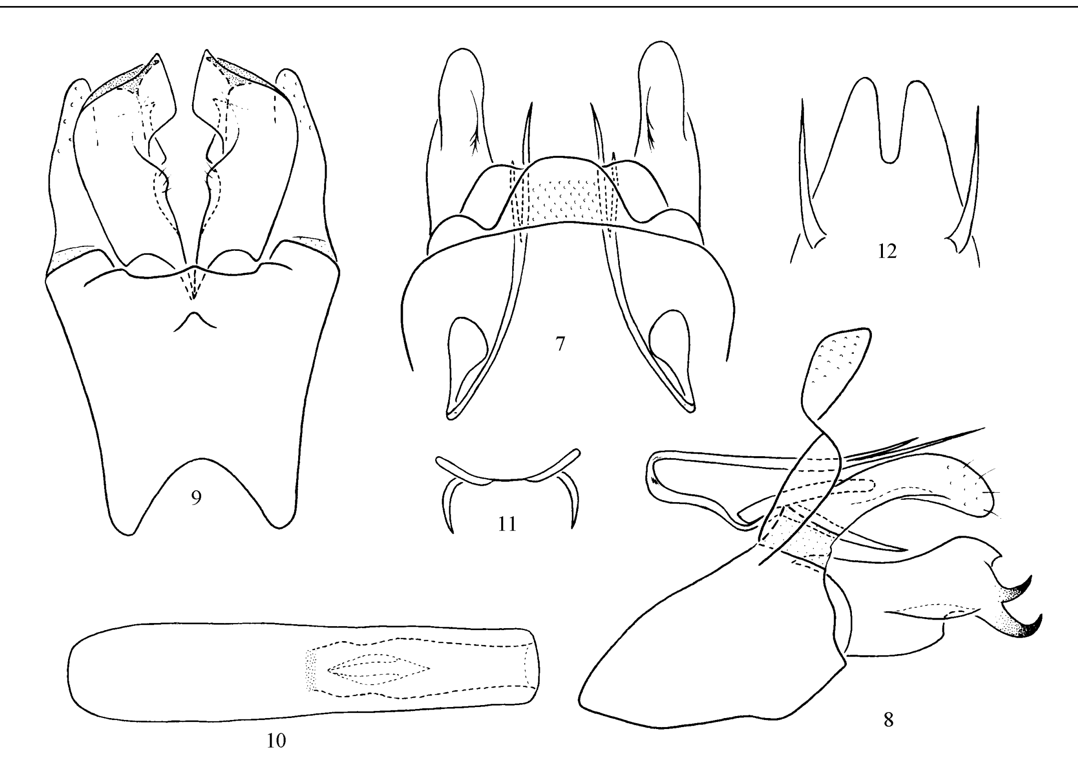


图 7~ 12 三歧缺叉多距石蛾, 新种 *Polyplectropus trifurcatus* sp. nov., 雄外生殖器 (adult male genitalia)
7. 背面观 (dorsal view) 8. 侧面观 (lateral view) 9. 腹面观 (ventral view) 10. 阳茎背面观 (phallus, dorsal view) 11. 阳茎下片后面观 (subphallic sclerite, caudal view) 12. 阳茎下片腹面观 (subphallic sclerite, ventral view)

腹侧片亚椭圆形。阳茎下片后面观呈 "V" 槽形, 腹面观末端中央三角形突出, 腹基部具 1 对骨化弯针状突起。阳茎简单管状, 长约为均宽的 4 倍。

正模 ♂, 广西上思县 (22.09°N, 107.58°E), 十万大山保护区, 距保护区入口西南 1.35 公里石头河, 海拔 300 m, 2004-06-05, 杨莲芳、C. J. Geraci 采。副模: 8 ♂♂, 采集资料同正模; 32 ♂♂, 广西上思县, 十万大山保护区, 距保护区入口西北 2.0 km 那林河, 海拔 281 m, 2004-06-05, J. C. Morse、孙长海采; 3 ♂♂, 广西上思县, 十万大山保护区, 距保护区入口西北 2.0 km 那林河, 海拔 284 m, 2004-06-05, 周欣、K. M. Kjer 采; 1 ♂, 广西上思县, 十万大山保护区石头河第 2 支流, 距保护区入口西南 3.4 km, 海拔 392 m, 2004-06-06, 杨莲芳、C. J. Geraci 采。

本种雄外生殖器与安徽种 *Polyplectropus acuminatus* Li & Morse, 1997 相似, 新种: 1) 下附肢主体末端尖锐, 直指尾方, 腹面观内侧缘近中部具 1 粗大的指突; 2) 阳茎下片末端中央具三角形突出。而后者下附肢主体末端强烈折向斜内侧, 故侧面观末端似呈平截状, 阳茎下片末端广弧形凹缺。

本种和三歧缺叉多距石蛾 *Polyplectropus trifurcatus* sp. nov. 与渐尖缺叉多距石蛾 *Polyplectropus acuminatus* Li & Morse, 1997 (安徽、江西), 尖刺缺叉多距石蛾 *Polyplectropus acutus* Li & Morse, 1997 (湖北、安徽、江西、浙江) 以及泰国种 *Polyplectropus nangajna* Malicky & Chantaramongkol, 1993 共享有如下衍征: 1) 阳茎下片腹基部具有 1 对细长的骨化弯针状突起; 2) 上附肢细长, 可能属于同一单系群。

词源: "*trigonius*" 意为 "三角形的", 指雄外生殖器下附肢腹面观端部 1/4 收窄呈三角形。

分布: 广西 (上思十万大山)。

钩状缺叉多距石蛾, 新种 *Polyplectropus unciformis* sp. nov. (图 9~ 24)

前翅长 5.5~ 5.6 mm (n = 3)。触角污黄色, 头褐色, 前胸淡褐色, 中、后胸褐色, 翅灰褐色。

雄外生殖器 第 IX 节腹板后缘凹缺广弧形, 中央三角形突出。上附肢侧面观宽叶状, 腹区扩大形成盘状叶托; 背基突于近基部 1/3 处成 120° 角折向尾方, 并分裂为等长的 2 枝。下附肢侧面观亚矩形, 长约为基宽的 2 倍, 末端具 1 浅凹, 腹面观端内角呈尖锐弯钩状, 端外角钝圆, 腹侧片极发达, 由基部扩展至近顶端 1/5 处, 几呈直角三角形。阳茎下片宽平,

腹面观近矩形, 末端具广 "V" 形凹缺。阳茎简单管状, 长约为均宽的 6 倍。

本种雄外生殖器与尼泊尔种 *Polyplectropus*

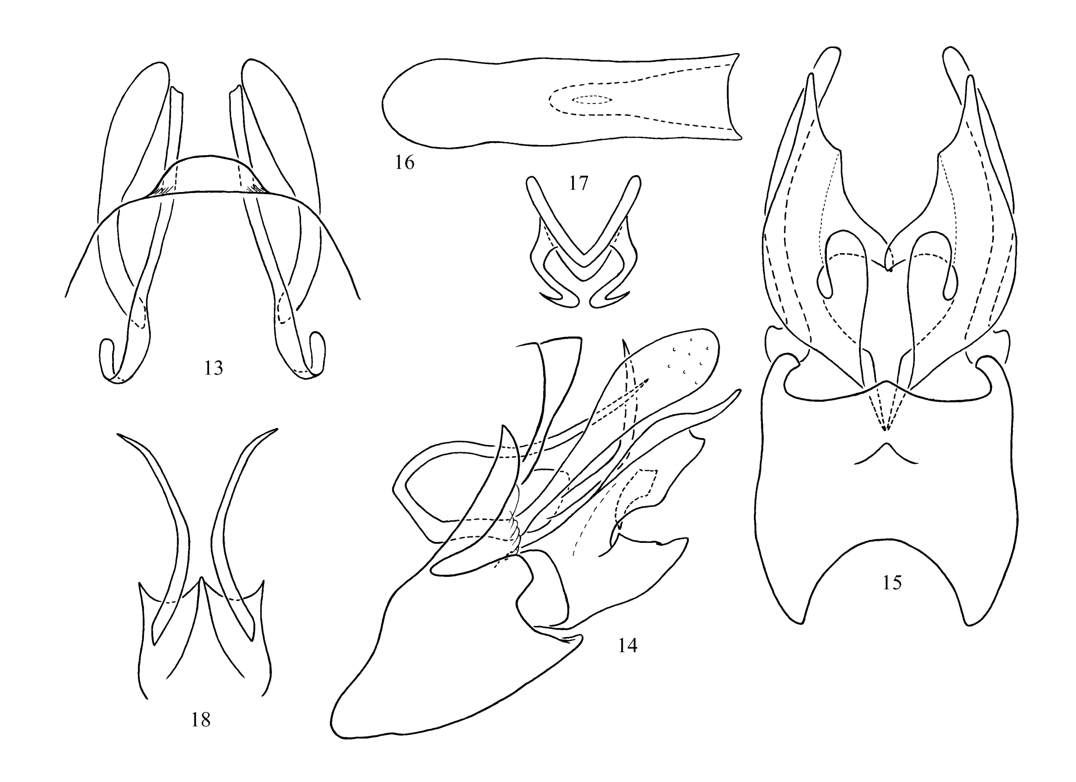


图 13~ 18 三角缺叉多距石蛾, 新种 *Polyplectropus trigonius* sp. nov., 雄外生殖器 (adult male genitalia)
13. 背面观 (dorsal view) 14 侧面观 (lateral view) 15. 腹面观 (ventral view) 16. 阳茎背面观 (phallus, dorsal view) 17. 阳茎下片后面观 (subphallic sclerite, caudal view) 18. 阳茎下片腹面观 (subphallic sclerite, ventral view)

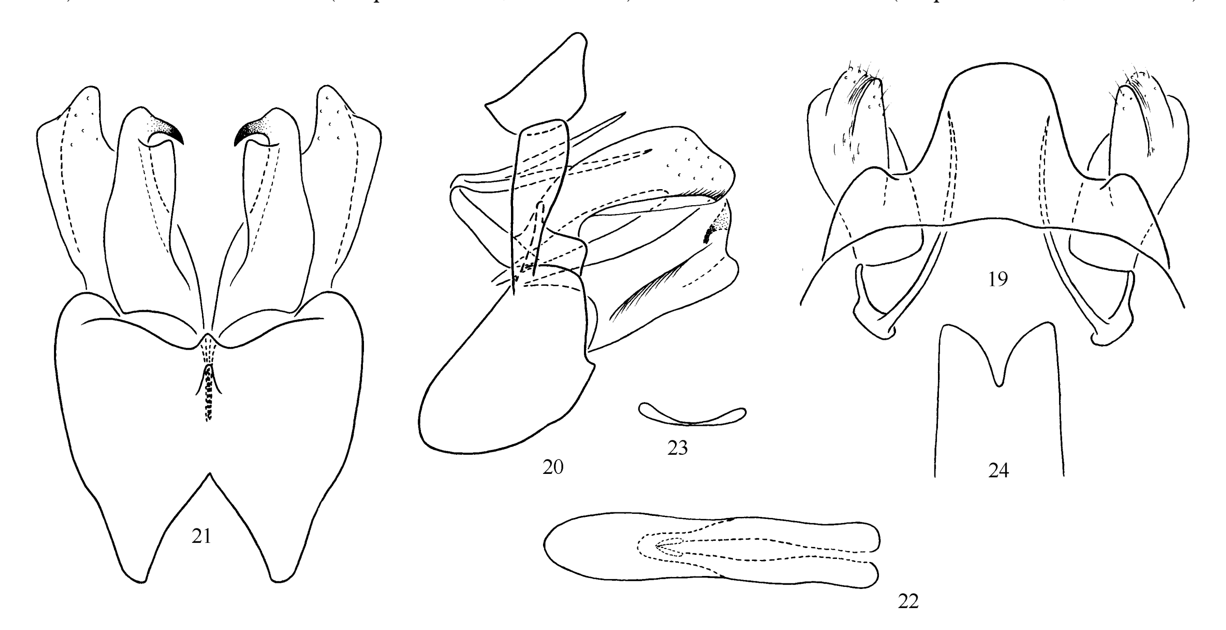


图 19~ 24 钩状缺叉多距石蛾, 新种 *Polyplectropus unciformis* sp. nov. 雄外生殖器 (adult male genitalia)
19. 背面观 (dorsal view) 20 侧面观 (lateral view) 21. 腹面观 (ventral view) 22. 阳茎背面观 (phallus, dorsal view) 23. 阳茎下片后面观 (subphallic sclerite, caudal view) 24. 阳茎下片腹面观 (subphallic sclerite, ventral view)

anakempat Malicky, 1995 较相似, 新种: 1) 下附肢腹面观端内角呈尖锐弯钩状, 腹侧片顶端宽大方叶形; 2) 阳茎下片末端具广"V"形凹缺。后者: 1) 下附肢端内角及腹侧片顶端均呈短三角形; 2) 阳茎下片仅末端中央具 1 短小缺刻。

正模 ♂, 河南省信阳市 (32.07°N, 114.04°E), 鸡公山, 1997-07-11, 王备新采。副模3 ♂♂, 河南省信阳市, 鸡公山, 1997-07-10, 王备新采。

词源: "*unciformis*" 意为"钩形的", 指雄外生殖器下附肢腹面观端内角呈尖锐弯钩状。

分布：河南（信阳鸡公山）。

指状缺叉多距石蛾，新种 Polyplectropus digitaliformis **sp. nov.** （图 25~30）

前翅长 5.5~5.6 mm（n=2）。触角黄色，头褐色，前胸淡褐色，中、后胸褐色，翅褐色。

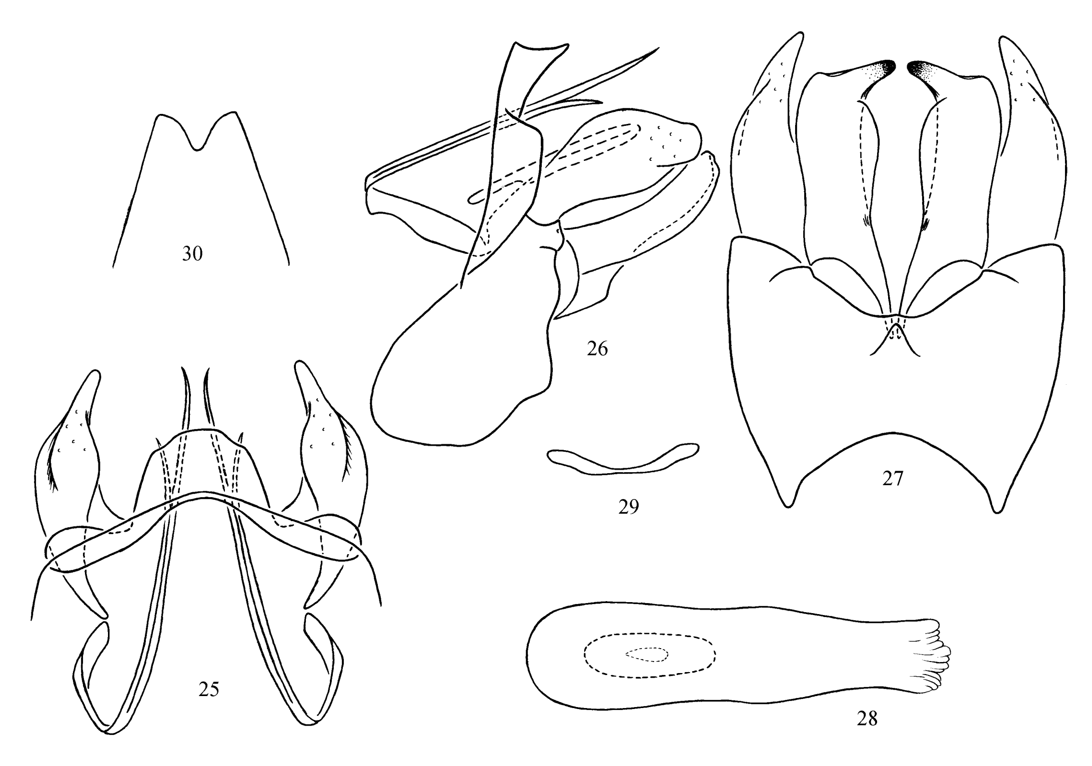


图 25~30 指状缺叉多距石蛾，新种 *Polyplectropus digitaliformis* sp. nov.，雄外生殖器（adult male genitalia）
25. 背面观（dorsal view） 26 侧面观（lateral view） 27. 腹面观（ventral view） 28. 阳茎背面观（phallus, dorsal view） 29. 阳茎下片后面观（subphallic sclerite, caudal view） 30. 阳茎下片腹面观（subphallic sclerite, ventral view）

雄外生殖器 第Ⅸ节腹板后缘凹缺广弧形。上附肢侧面观基部和端部较窄，中部膨大，背面观末端1/3收窄呈指状；背基突侧面观于近基部1/3处成135°角折向尾方，并分裂为1长1短2枝。下附肢侧面观端部3/4呈狭长香蕉形，基部1/4较宽，腹面观端内角尖锐，指向斜后方，顶端高于端外角，腹侧片较发达，边缘呈圆弧形，由基部延伸至近端部1/5处。阳茎下片宽平，腹面观梯形，末端具广"U"形凹缺。阳茎简单管状，长约为均宽的4.4倍。

正模 ♂，广东省龙门县（23.43°N，114.13°E），南昆山保护区保护站门口无名小溪，海拔 515 m，2004-05-16，J. C. Morse、杨莲芳采。副模1 ♂，广东省龙门县，南昆山保护区天堂顶河，海拔 542 m，2004-05-16，J. C. Morse、杨莲芳采。

本种雄外生殖器与尼泊尔种 *Polyplectropus anakempat* Malicky, 1995 较相似，新种：1）下附肢端内角呈锐角指向斜后方，高于端外角，腹侧片较发达，边缘圆弧形；2）阳茎下片梯形，末端具广"U"形凹缺。后者：1）下附肢顶端内角及腹侧片顶端均呈短三角形；2）阳茎下片矩形，仅末端中央具1小缺刻。

词源："*digitaliformis*"意为"指状的"，指雄外生殖器上附肢背面观末端1/3收窄呈指状。

分布：广东（龙门南昆山）。

具针缺叉多距石蛾，新种 Polyplectropus aciculatus **sp. nov.** （图 31~36）

前翅长 5.5 mm（n=1）。触角黄色，头褐色，前胸淡褐色，中、后胸褐色，翅灰褐色。

雄外生殖器 第Ⅸ节腹板后缘广弧形凹缺，中央略突出。上附肢侧面观叶状，背缘弧形拱起，腹缘直，基部略收窄，背面观端缘近平截，基部内侧具1骨化针突；背基突侧面观于近基部1/3处成130°角折向尾方，并分裂为长、短2枝。下附肢侧面观长约为基宽的2倍，端部1/3具"U"形凹缺，似呈螯肢状，腹面观顶端内角强烈骨化，粗指状，指向中轴，端外角仅略高于端内角，；腹侧片极发达，由基部伸达主体近端部，亚三角形，顶端宽圆。阳茎下片宽而扁平，腹面观末端具1广"V"形凹缺。阳茎简单管状，长约为均宽的4.5倍。

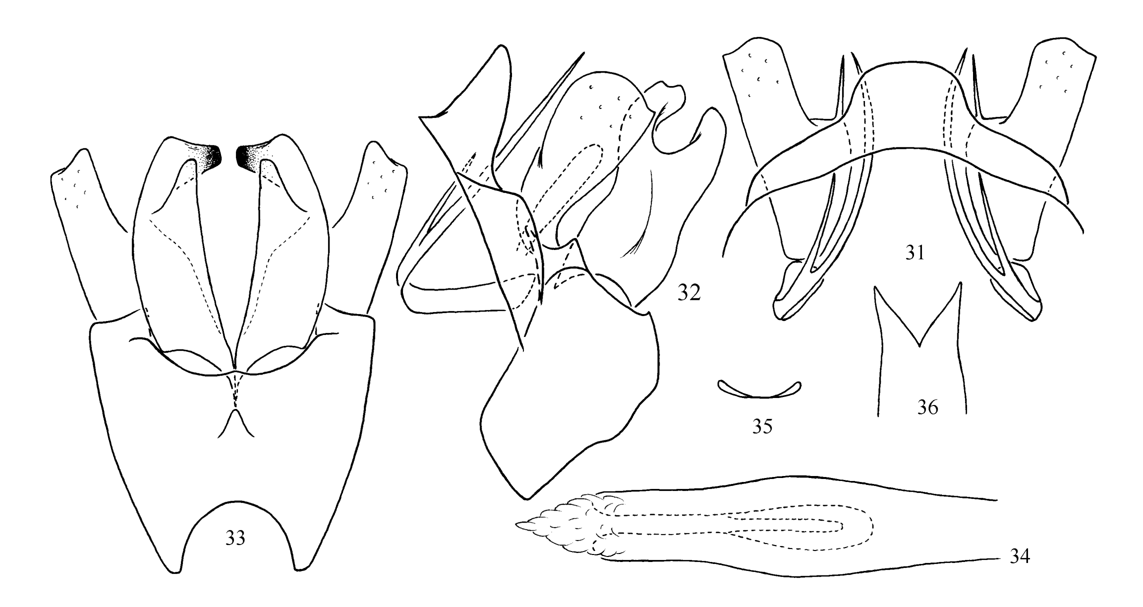


图 31~ 36 具针缺叉多距石蛾, 新种 *Polyplectropus acialatus* sp. nov., 雄外生殖器 (adult male genitalia)
31. 背面观 (dorsal view) 32. 侧面观 (lateral view) 33. 腹面观 (ventral view) 34. 阳茎背面观 (phallus, dorsal view) 35. 阳茎下片后面观 (subphallic sclerite, caudal view) 36. 阳茎下片腹面观 (subphallic sclerite, ventral view)

正模 ♂, 安徽省祁门县 (29.8°N, 117.7°E), 彭龙乡湘东村, 2003-09-27, 单林娜、孙长海采。

本种雄外生殖器与新种 *Polyplectropus digitaliformis* sp. nov. 相似, 本种: 1) 下附肢侧面观末端螯状, 腹面观端外角高于端内角, 腹侧片端部指状; 2) 阳茎下片腹面观近四边形, 末端具广 "V" 形凹缺。而后者下附肢侧面观似香蕉状弯曲, 末端钝截, 腹面观端内角高于端外角, 腹侧片向内侧扩展呈圆弧形; 阳茎下片腹面观末端具广 "U" 形凹缺。

本种和钩状缺叉多距石蛾 *Polyplectropus unciformis* sp. nov., 指状缺叉多距石蛾 *Polyplectropus digitaliformis* sp. nov. 共享有如下衍征: 1) 上附肢背基突分叉; 2) 阳茎下片宽薄片状。根据邻近国家种类的描述及特征图研究, 泰国种 *Polyplectropus nahor* Malicky & Chantaramongkol, 1993, 越南种 *Polyplectropus bay* Malicky, 1995 和尼泊尔种 *Polyplectropus anakempat* Malicky, 1995 也共享有这些特征, 可能属于同一单系群。

词源: "*acialatus*" 意为 "具针的", 指雄外生殖器上附肢背面观内侧具 1 骨化针突。

分布: 安徽 (祁门)。

致谢 德国自然博物馆 Dr. Wolfram Mey、奥地利 Dr. Hans Malicky、俄罗斯科学研究所 Dr. Tatyana Arefina 为本研究赠送部分文献, 美国罗格斯大学 Dr. Karl M. Kjer、Dr. Xin ZHOU、克莱姆森大学 Dr. Christy J. Geraci、南京农业大学孙长海、王备新博士、南京师范大学周长发博士和河南平顶山工学院单林娜博士为本研究标本采集提供帮助, 在此深表感谢!

REFERENCES (参考文献)

Arefina, T. I. 1997. Trichoptera: Polycentropodidae. *In*: Key to the insects of Russian Far East. Vol. V. Trichoptera and Lepidoptera. Part I. Vladivostok. Dal nauka. 75-76.

Hsu, L-P and Chen, G S 1996. Five new species of polycentropodid caddisflies from Taiwan (Trichoptera: Polycentropodidae). *Chinese Insects*, 16: 117-124.

Leng, K-M and Yang, L-F 2004. Five new species of Limnephilidae (Insecta, Trichoptera) from China. *Acta Zootaxonomica Sinica*, 29 (3): 516-522. [冷科明, 杨莲芳, 2004. 中国沼石蛾科五新种记述 (昆虫纲, 毛翅目). 动物分类学报, 29 (3): 516~ 522]

Li, Y-W and Morse, J. C. 1997. *Polyplectropus* species (Trichoptera: Polycentropodidae) from China, with consideration of their phylogeny. *Insecta Mundi*, 11: 300-310.

Malicky, H. and Chantaramongkol, P. 1997. Weitere neue Kocherfliegen (Trichoptera) aus Thailand Arbeit Nr. 20 uber thailandische Kocherfliegen. *Linzer biologische Beiträge*, 29 (1): 204-207, 212-214.

Malicky, H. 1993. Neue asiatische Köcherfliegen (Trichoptera: Philopotamidae, Polycentropodidae, Psychomyidae, Ecnomidae, Hydropsychidae, Leptoceridae). *Linzer biologische Beiträge*, 25 (2): 1099-1136.

Malicky, H. 1993. Neue asiatische Kocherfliegen (Trichoptera: Rhyacophilidae, Philopotamidae, Ecnimidae und Polycentropodidae). *Entomologische Berichte Luzern*, 29: 81.

Malicky, H 1995. Neue Kocherfliegen (Trichoptera, Insecta) aus Vietnam. *Linzer Biologische Beiträge*, 27 (2): 879-880.

Malicky, H 1995. Weitere neue Kocherfliegen (Trichoptera) aus Asien. *Braueria* (*Lunz am See*, *Austria*), 22: 17-20.

Malicky, H., Chantaramongkol, P., Cheunbarn, S. and Saengpradab, N. 2001. Einige neue Kocherfliegen (Trichoptera) aus Thailand. *Braueria* (*Lunz am See*, *Austria*), 28: 11.

Wang, B-X, Sun, G H, Yang, L-F and Leng, K-M 1998. Trichoptera: Polycentropodidae. *In*: Insects of Longwangshan Nature Reserve. China Forestry Publishing House, Beijing. 153-154. [王备新, 孙长海, 杨莲芳, 冷科明, 1998. 毛翅目多距石蛾科. 龙王山昆虫. 北京: 中国林业出版社. 153~ 154]

Yang, W-F and Yang, L-F 2006. Two new species of Phryganeidae (Insecta, Trichoptera) from China. *Acta Zootaxonomica Sinica*, 31 (1):

188-192. [杨维芳, 杨莲芳, 2006. 中国石蛾科褐纹石蛾属 2 新种记述 (昆虫纲: 毛翅目). 动物分类学报, 31 (1): 188~192]

Zhong H, Yang, L-F and Morse, J. C. 2006. Six new species of *Polyplectropus* (Insecta, Trichoptera) from China. *Acta Zootaxonomica Sinica*, 31 (4): 859-866. [钟 花, 杨莲芳, John C. Morse, 2006. 中国缺叉多距石蛾属 6 新种记述 (毛翅目, 多距石蛾科). 动物分类学报, 31 (4): 859~866]

SIX NEW SPECIES OF THE GENUS POLYPLECTROPUS (INSECTA, TRICHOPTERA, POLYCENTROPODIDAE) FROM CHINA

ZHONG Hua[1], YANG Lian-Fang[1*], John C. Morse[2]

1. *Department of Entomology, Nanjing Agricultural University, Jiangsu 210095, China*
2. *Department of Entomology, Soils and Plant Sciences, Clemson University, Clemson, SC, 29634-0315, USA*

Abstract In this paper, six new species of the genus *Polyplectropus* Ulmer are described and illustrated, namely *P. rotundifolius* sp. nov. and *P. digitaliformis* sp. nov., from Guangdong, *P. trifurcatus* sp. nov., from Jiangxi, *P. trigonius* sp. nov., from Guangxi, *P. unciformis* sp. nov., from Henan, and *P. acicdatus* sp. nov., from Anhui. *P. rotundifolius* sp. nov. belongs to the *P. inaequalis* Li & Morse Species Group. The closely related species of *P. trigonius* sp. nov. and *P. acicdatus* sp. nov. are discussed. The type specimens of the new species are deposited in the Insect Collection of Nanjing Agricultural University.

1 Polyplectropus rotundifolius **sp. nov.** (Figs. 1-6)

Length of each forewing 6.1 mm ($n = 1$). Head brown with yellowish antennae, pronotum light brown, meso- and meta-nota brown, forewings light brown.

This new species is very similar to *Polyplectropus involutus* Li and Morse, 1997, from Jiangxi, but differs in: 1) the apex of the ventrolateral lobe of each inferior appendage is rounded (triangular in *P. involutus*); 2) the apicomesal end of each inferior appendage is a short triangle (long and slender, almost meeting each other in *P. involutus*); 3) the dorsal branch of each superior appendage is approximately 1/2 as long as its ventral branch in lateral view (the dorsal branch is 2/3rds as long as its ventral branch in *P. involutus*); 4) the dorsobasal process of each superior appendage has its recurved portion very straight in lateral view (rounded downward in *P. involutus*); and 5) the apicomesal excision of the subphallic sclerite has a broad "V" excision (a short and small excision occurs in *P. involutus*).

Apparently, this new species is a member of the monophyletic *Polyplectropus inaequalis* Li & Morse Species Group, as suggested by its forked male superior appendage and broad, flat subphallic sclerite. This species group includes *P. involutus* Li & Morse, 1997 (Jiangxi), *P. inaequalis* Ulmer, 1927 (Taiwan), *P. nanjingensis* Li & Morse, 1997 (Jiangsu, Shaanxi, Anhui, Zhejiang), *P. explanatus* Li & Morse, 1997 (Jiangxi, Henan, Guangdong) and *P. nocturnus* Arefina, 1996 (Russia) (Li & Morse, 1997).

Holotype ♂, Guangdong Province, Long-men County (24.48°N, 113.18°E), unnamed stream at entrance of the Mt. Nankun Nature Preserve, alt. 515 m, 16 May 2004, coll. John MORSE, YANG Lian-Fang.

Distribution. Guangdong.

2 Polyplectropus trifurcatus **sp. nov.** (Figs. 7-12)

Length of each forewing 5.1 mm ($n = 1$). Head brown with yellowish antennae and dark yellowish head warts, pronotum dark yellow, meso- and meta-nota brown with yellowish warts, forewings gray.

This new species is very similar to *Polyplectropus acutus* Li and Morse, 1997, from Hubei, but differs in: 1) the dorsobasal process of each superior appendage has its distal 1/3rd forked into two branches (not forked in *P. acutus*); 2) the apex of each inferior appendage is divided into 3 pieces (only 2 pieces in *P. acutus*); 3) the apex of the subphallic sclerite has a deep "U" excision (a triangular protrusion occurs in *P. acutus*).

Holotype ♂, Jiangxi Province, Mt. Jiulian National Nature Preserve (24°32′N, 114°28′E), Unnamed Tributary of Xiagongtang Stream, alt. 630 m, 7 June 2005, coll. ZHOU Xin, SUN Chang-Hai.

Distribution. Jiangxi.

3 Polyplectropus trigonius **sp. nov.** (Figs. 13-18)

Length of each forewing 4.5-5.8 mm ($n = 42$). Head brown with light brown antennae, pronotum light brown, meso- and meta-nota and forewings brown.

This new species is very similar to *Polyplectropus acuminatus* Li and Morse, 1997, from Anhui, but differs in: 1) the apex of each inferior appendage is acute and pointing caudad, its inner margin has a thumb-like process near the middle (the apex is recurved mesad and anterad in *P. acuminatus*); 2) the apex of the subphallic sclerite has a triangular protrusion (a broadly rounded excision occurs in *P. acuminatus*).

Apparently, this new species and *Polyplectropus trifurcatus* sp. nov. are related to *P. acuminatus* Li & Morse, 1997 (Anhui, Jiangxi), *P. acutus* Li & Morse, 1997 (Hubei, Anhui, Jiangxi, Zhejiang) and *P. nangajna* Malicky & Chantaramongkol, 1993 (Thailand), in sharing two homologues (a sclerotized basoventral

* Corresponding author.

projection on the subphallic sclerite and slender superior appendages) which suggest that these 5 species may be a monophyletic species group.

Holotype ♂, Guangxi Province, Shangsi County (22.09°N, 107.58°E), Mt. Shiwanda National Forest Park, Shitou He, trib of Mingjiang He, 1.35 km SW of main entrance to Park, alt. 300 m, 5 June 2004, coll. YANG Lian-Fang, Christy Jo GERACI. Paratypes: 8 ♂♂, same data as holotype; 32 ♂♂, Guangxi Province, Shangsi County, Nalinhe, rib of Mingjiang He, 2.0 km NW of main entrance to the Mt. Shiwanda National Forest Park, alt. 281 m, 5 June 2004, coll. John MORSE, SUN Chang-Hai; 3 ♂♂, Guangxi Province, Shangsi County, Nalin He, trib of Mingjiang He, 2.2 km NW of main entrance to the Mt. Shiwanda National Forest Park, alt. 284 m, 5 June 2004, coll. ZHOU Xin, Karl M. KJER; 1 ♂, Guangxi Province, Shangsi County, Mt. Shiwanda National Forest Park, Shitou He at second trib, 3.4 km SW of main entrance to Park, alt. 392 m, 6 June 2004, coll. YANG Lian-Fang, Christy Jo GERACI.

Distribution. Guangxi.

4 Polyplectropus unciformis **sp. nov.** (Figs. 19-24)

Length of each forewing 5.5-5.6 mm (n = 3). Head brown with dark yellowish antennae, pronotum light brown, meso- and meta-nota brown, forewings grayish brown.

This new species is very similar to *Polyplectropus anakempat* Malicky, 1995, from Nepal, but differs in: 1) the inner apical angle of each inferior appendage is acute and hooked, with the apex of its ventrolateral lobe broad and leaf-like (both the inner apical angle and the ventrolateral lobe are short and triangular in *P. anakempat*); 2) the apex of the subphallic sclerite has a broadly "V"-shaped excision (a slight excision occurs in *P. anakempat*).

Holotype ♂, Henan Province, Xinyang County (32.07°N, 114.04°E), Mt. Jigong, 11 July 1997, coll. WANG Bei-Xin. Paratypes 3 ♂♂, Henan Province, Xinyang County (32.07°N, 114.04°E), Mt. Jigong, 10 July 1997, coll. WANG Bei-Xin.

Distribution. Henan.

5 Polyplectropus digitaliformis **sp. nov.** (Figs. 25-30)

Length of each forewing 5.5-5.6 mm (n = 2). Head brown with yellowish antennae, pronotum light brown, meso- and meta-nota brown, forewings brown.

This new species is very similar to *Polyplectropus anakempat* Malicky, 1995, from Nepal, but differs in: 1) the inner apical angle of each inferior appendage is acute, much higher than the outer apical angle, and directed slightly caudad, with its ventrolateral lobe broadly rounded (both the inner apical angle and ventrolateral lobe are short and triangular in *P. anakempat*); 2) the apex of the subphallic sclerite is trapezoid with a broadly "U"-shaped excision (with a slight excision in *P. anakempat*).

Holotype ♂, Guangdong Province, Longmen County (23.43°N, 114.13°E), unnamed stream at entrance to the Mt. Nankun Provincial Natural Preserve, alt. 515m, 16 May 2004, coll. John MORSE, YANG Lian-Fang. Paratype 1 ♂, Guangdong Province, Longment County, (23.43°N, 114.13°E), Mt. Nankun Provincial Nature Preserve, Tiantangding He, alt. 542 m, 16 May 2004, coll. John MORSE, YANG Lian-Fang.

Distribution. Guangdong.

6 Polyplectropus aciculatus **sp. nov.** (Figs. 30-36)

Length of each forewing 5.5 mm (n = 1). Head brown with yellowish antennae, pronotum light brown, meso- and meta-nota brown, forewings grayish brown.

This new species is very similar to *Polyplectropus digitaliformis* sp. nov., from Guangdong, but differs in: 1) the apex of each inferior appendage is bilobed, somewhat cheliform in lateral view, in ventral view its outer apical angle is slightly higher than its inner apical angle, with its ventrolateral lobe finger-like (the apex of inferior appendage truncated in lateral view, in ventral view with the inner apical angle obviously higher than the outer apical angle, with its ventrolateral lobe arc-like in *P. digitaliformis*); 2) the apex of the subphallic sclerite has a broadly "V"-shaped excision (a broadly "U"-shaped excision occurs in *P. digitaliformis*).

This new species is closely related with *Polyplectropus unciformis* sp. nov. and *P. digitaliformis* sp. nov. as indicated by their sharing the following two homologues: 1) a forked dorsobasal process of each inferior appendage and 2) a broad, flat subphallic sclerite. Apparently, *P. nahor* Malicky & Chantaramongkol, 1993 (Thailand), *P. bay* Malicky, 1995 (Vietnam) and *P. anakempat Malicky*, 1995 (Nepal), also share these characters, which suggests that these 6 species may constitute a monophyletic species group.

Holotype ♂, Anhui Province, Qimen County, (29.8°N, 117.7°E), Penglongxiang, Xiangdongcun, 27 Sep. 2003, coll. SHAN Lin-Na, SUN Chang-Hai.

Distribution. Anhui.

Key words Trichoptera, *Polyplectropus*, new species, China.